by JEAN CROCKETT, IRWIN FRIEND, and HENRY SHAVELL*

The Impact of Monetary Stringency on Business Investment

THE year 1966 was characterized by one of the severest credit squeezes of the past half century. In the late summer, interest rates on high quality corporate bonds reached a level that had not been matched since the early 1920's and that was approached only briefly in 1932. The 1966 developments reflected a series of restrictive monetary measures taken by the Federal Reserve Board to offset the inflationary effect of a surging demand for goods and services from virtually all sectors of the economy. While fiscal policy and moral suasion were also used to combat inflationary tendencies, there was an unusually heavy reliance on monetary measures.

These measures were initiated around the end of 1965 and were intensified from the spring of 1966 until the fall, when the Board apparently moderated its restrictive policy because of the waning of inflationary pressures. Net free reserves of member banks (excess reserves less borrowings from Reserve Banks) declined substantially from January to October and then started to increase. The seasonally adjusted money stock (currency plus demand deposits), which had been rising markedly, declined from April to October; it then leveled off and in early 1967 experienced a recovery. Although the money stock plus time deposits (which is considered by some economists to be a more comprehensive measure of money supply) increased moderately from April to October, the rate of growth was much lower than in the preceding or following periods. Most capital market interest yields reached a peak in the late summer, though others—such as those on short-term bank loans and housing—did not ease until close to the end of the year.

As a result of these developments, 1966 provides an unusually favorable basis for studying the economic effects of restrictive monetary measures. Economists have generally assumed that such measures (acting through interest rates, credit availability, and perhaps directly through the money supply) have their most important impact on the demand for different types of investment and quasi-investment goods, including housing, plant and equipment, inventories, consumer durables, and State and local construction. However, except for housing where the evidence is reasonably clear, there has been no convincing empirical verification of this. One of the basic difficulties, of course, involves separating the effects of tight money from the effects of all the other influences on investment demand, particularly since restrictive monetary policy and booming demand usually coincide. The rapid and substantial decline in housing investment starting in the second quarter of 1966—which was associated with evidence of a tightening in the availability of mortgage money rather than with a weakening in basic demand—points to the dramatic impact of tight money on the housing market in that period. However, it is much more difficult to isolate the impact on other sectors. For business investment in plant and equipment and in inventories, which constitutes by far the largest part of total private investment, there are no obvious indications in the 1966 national accounts or in other available data of any substantial effect of restrictive monetary policy, though there is some evidence of a moderate slackening in nonresidential construction starting in the second quarter of the year.

An examination of earlier experience also points to an indeterminate relationship between tight money policy and business investment, again reflecting, at least in part, the coincidence of such policy and booming demand. Econometric attempts to isolate the effects of monetary policy from other supply and demand considerations affecting business investment have been inconclusive. Depending on the econometric model utilized, it is possible to point to significant interest rate effects on plant and equipment but not on inventories, on inventories but not on plant and equipment, on both, or on neither. Generally, the negative results seem more impressive than the positive results. The latter are frequently derived by testing a large number of models that turn out to have insignificant or even incorrect interest rate effects before models with nominally significant effects of correct sign are obtained. Many attempts have also been made to obtain insights into the relationship between financial factors and business investment on the basis of interviews with businessmen or questionnaires filled in by them.

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However, these have provided qualitative rather than quantitative information and have suffered from the absence of objective data against which the responses could be checked.

The survey approach

In an attempt to fill in this striking gap in our basic knowledge about the effects of monetary policy, we decided to use the unique potential provided by the surveys of actual and anticipated investment in plant and equipment and in inventories conducted regularly by OBE and the Securities and Exchange Commission.[1]

In late March, a special questionnaire was sent to all firms cooperating in these surveys (except for certain transportation companies). The questionnaire asked for: (1) the factors causing *appreciable* differences between actual plant and equipment expenditures in 1966 and the expenditures anticipated early in the year (both figures are collected in the regular surveys); (2) detailed information on the timing and magnitude of *any* reductions in plant and equipment or inventory outlays that resulted from financial market factors during 1966, along with the specific factors or conditions primarily responsible; and (3) detailed information on the impact of 1966 financial market factors on 1967 investment anticipations both for plant and equipment and for inventories, again with the factors primarily responsible. The first section of the questionnaire was designed to give essentially qualitative information, along lines collected in two earlier studies,[2] on the relative importance of the different factors (including financial market developments) responsible for revisions in planned plant and equipment expenditures in 1966. The second and third sections were designed to probe, for the first time, much more deeply into the size and timing of, as well as the reasons for, the impact of the financial market developments on business investment, including inventories as well as plant and equipment, and to separate the direct from the indirect effects more explicitly. The questionnaire used for this study and technical notes describing the sample are appended to this article.

Before turning to a discussion of the survey results, we might note that 1966 can be regarded as a critical test of the potential impact of monetary policy on business investment. In view of the severe impact on the housing market in the second half of the year and the disruption of the municipal bond market in late August, it is difficult to conceive of the application of even stronger doses of generally restrictive monetary policy, unless more heroic measures are taken to at least partially insulate those sectors most sensitive to credit stringency from its impact.

Factors Accounting for Appreciable Changes in 1966 Plant and Equipment Expenditures

Of the 4,418 firms (out of 8,876 firms surveyed) whose replies to the special questionnaire were received in time to be included in the tabulations for this article, 1,057 replied that their actual 1966 plant and equipment expenditures had been changed appreciably—either in aggregate dollar amounts or in composition—from the outlays expected early that year.[3] These firms were asked to indicate the most important ("principal") factor and other major factors causing upward and/or downward deviations between actual and anticipated expenditures. The major purpose of this part of the questionnaire was to give perspective on the relative importance of different factors causing revisions in 1966 plant and equipment programs. Since similar information had been collected for 1949 and 1955 in earlier studies, rough comparisons can be made with these earlier periods.

Both for the 1,057 respondents as a group[4] and for the different size categories,[5] increases in anticipated plant and equipment expenditures were more common than decreases in 1966 (tables 1 and 2). Moreover, a change in the sales outlook was by far the most important single factor accounting for increased plant and equipment outlays over anticipated levels in 1966. The other factors that on balance tended to increase outlays significantly were changes from expected plant and equipment costs or prices, technological developments, mergers or acquisitions, and routine underestimates.

The most important factor depressing plant and equipment outlays was the delay in equipment deliveries and/or construction progress; this was more dominant than any of the factors accounting for increases. The other factors that on balance tended to significantly depress outlays included in financial market conditions, the investment tax credit, working capital re-

[1] The plant and equipment survey normally collects both annual and quarterly data on actual and anticipated outlays for up to a year ahead from a large sample of U.S. nonfarm business firms. Anticipated quarterly inventory investment is collected regularly from manufacturing firms only. For the present study, the reporting panel for the broader plant and equipment survey was used.

[2] See Irwin Friend and Jean Bronfenbrenner, "Business Investment Programs and Their Realization," SURVEY, December 1950, and Murray F. Foss and Vito Natrella, "Investment Plans and Realization," SURVEY, June 1957.

[3] A comparison was made between the qualitative replies ("yes" or "no") to question 1 of the questionnaire ("Were your actual expenditures for plant and equipment changed appreciably, either in terms of aggregate dollar amount or in composition or form, from those expected early that year?") and the dollar amount of differences between anticipated and actual expenditures as reported in the regular OBE–SEC investment surveys. A higher proportion of firms answering "yes" than of those answering "no" to question 1 had deviations greater than plus or minus 20 percent (78 percent as compared with 67 percent). For the largest size manufacturing firms, this difference was more pronounced (69 percent as compared with 53 percent). If allowance were made for the inclusion of compositional as well as aggregative changes in the replies to question 1, the differences indicated above would presumably be larger.

[4] It should be noted that the 1,057 respondents gave 423 principal factors and 788 other major factors as reasons for increases from planned expenditures and 322 principal factors and 693 other major factors as reasons for downward revisions from planned expenditures. Thus, the figure 1,057 cannot be constructed from the data in tables 1 and 2.

[5] A more detailed size distribution than the one presented in this article is available and has been used for analytical purposes.

quirements, and net earnings. The most important single factor depressing outlays in the "other factors" category was the program of voluntary restraint initiated by the Administration in early 1966. Not surprisingly, in view of the greater importance of debt than of external equity financing, unanticipated changes in the availability and cost of debt financing affected many more firms than corresponding changes in the equity markets.

Size and industry comparisons

Chart 7 portrays differences in the relative importance of factors responsible for deviations between anticipated and actual plant and equipment expenditures by size of firm. It indicates that unexpected delays in equipment deliveries and in construction progress were much more important in reducing outlays for the larger firms than for the smaller ones. Although the capital goods supply situation was also influential in raising planned outlays—whenever an unexpected easing of equipment deliveries and construction progress occurred—its impact was clearly less on upward capital outlay revisions than on downward revisions, and also varied directly with the size of firm. The net reduction in expenditures (decreases less increases) attributable to the capital goods supply situation was relatively most important for the largest firms.

Among firms spending more than originally planned for plant and equipment, the relative importance of higher-than-expected sales was greatest for those with assets of $10 million to $50 million. Deviations from expected sales were considerably less important among firms with downward revisions in capital spending than among firms with upward revisions. Changes from earlier expectations in net earnings were far less influential than changes in sales outlook for companies reporting increased capital spending, especially among larger firms, but were as important as, or more important than, sales among firms spending less than programed. The relative importance of other frequently cited factors, such as financial market conditions and plant and equipment costs, did not appear to vary significantly among firms of different asset size.

An analysis of the reasons given for deviations in 1966 between planned and actual capital outlays did not reveal appreciably different patterns of motivation for changes in outlays, except for public utilities. Utilities mentioned financial market developments as a fac-

Table 1.—Factors Responsible for Deviations Between Anticipated and Actual Plant and Equipment Expenditures in 1966 [1]

Number of firms reporting changes from expectations in—	Distribution of principal factors				Distribution of other major factors			
	Increasing outlays [2]	Decreasing outlays [2]	Increasing outlays [2]	Decreasing outlays [2]	Increasing outlays [2]	Decreasing outlays [2]	Increasing outlays [2]	Decreasing outlays [2]
	Number [3]		Percent		Number [4]		Percent	
1. Sales outlook	112	21	26.5	6.5	163	101	20.4	14.5
Firms with sales above expectations	98	2			139	9		
Firms with sales below expectations	6	19			18	82		
Firms not specifying direction	8	0			12	10		
2. Current expenses	9	5	2.1	1.6	45	46	5.1	9.5
3. Net earnings	18	18	4.3	5.6	89	119	11.2	17.2
Firms with earnings above expectations	15	1			66	3		
Firms with earnings below expectations	3	16			15	106		
Firms not specifying direction	0	1			9	8		
4. Working capital requirements	11	15	2.6	4.7	57	93	7.1	13.4
5. Timing of deliveries and/or construction progress	69	154	16.3	47.8	96	78	12.3	11.2
6. Plant and equipment costs (viz., prices paid)	31	8	7.3	2.5	93	25	11.7	3.8
Firms with costs above expectations	28	1			80	17		
Firms with costs below expectations	1	4			4	6		
Firms not specifying direction	2	3			9	3		
7. Financial market conditions [5]	4	35	.9	10.9	44	86	5.5	12.4
Firms mentioning availability and cost of debt financing	2	31			38	73		
Firms mentioning availability and cost of equity financing	2	4			22	37		
8. Technological developments	27	9	6.4	1.8	57	25	5.4	3.6
9. Investment tax credit [6]	2	16	.5	5.0	12	44	1.5	6.4
10. Mergers or acquisitions [6]	40	8	9.5	2.5	44	3	5.5	1.2
11. Routine underestimation or overestimation [6]	31	9	7.3	2.8	31	1	3.6	.1
12. Accidental damage [6]	11	1	3.6	.3	6	6	.8	.8
13. All other factors	56	26	13.7	8.1	38	45	4.9	6.5
Totals [7]	425	322	100.0	100.0	793	653	100.0	100.0

1. Based on factors cited by firms answering "yes" to question: "Were your actual 1966 expenditures for plant and equipment changed appreciably, either in terms of aggregate dollar amount or in composition or form, from those expected early that year?"

2. Increasing (decreasing) outlays refer to 1966 expenditures higher (lower) than anticipated by the firm early in 1965.

3. Not all firms specified the principal factor. Where only one major factor was indicated, this was taken to be the principal factor.

4. A number of firms specified several major factors.

5. The total may be smaller than the sum of the components since some firms mentioned both debt and equity financing.

6. Specified under "other factors" in the questionnaire.

7. Percentage components may not add to 100 percent because of rounding.

Source: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

tor responsible for reducing planned capital outlays relatively much more frequently than did manufacturing and all other industries covered. Financial markets accounted for one-fourth of all cases of decreased outlays among the utilities and for one-tenth and one-eighth of all cases among manufacturing and all other industries respectively. Among companies spending less than planned, public utility firms cited equipment delivery and construction delays as major factors twice as often as manufacturing firms and about three times as often as all other industries.

Comparison with earlier studies

The relative influence of factors principally responsible for deviations from planned investment in plant and equipment as reported in the survey for 1966 may be roughly compared with similar information collected for 1949 and 1955 in two earlier studies. (See technical notes.) This comparison (chart 8) is limited to manufacturing firms. Perhaps the most striking difference between the 1966 results and those for 1949 and 1955 is the increased influence of both financial market developments and capital goods supply conditions in effecting reductions from planned capital outlays. Financial market developments were mentioned as the principal factor inducing downward revisions in plans in 11 percent of the 1966 cases as compared with 1 percent or less in 1949 and 1955. Slower-than-expected equipment deliveries and construction progress were cited as the principal reason for downward changes in spending in about 48 percent of the cases in 1966, as compared with 38 percent and 17 percent, respectively, in 1955 and 1949.

The marked decline in the relative importance of the sales outlook among firms spending less than planned from 1949 (34 percent of all principal factors cited) to 1955 (10 percent) and 1966 (7 percent) is not too surprising in view of the cyclical differences among the years concerned. The year 1949 was essentially a recession year, and downward changes in sales outlook during the year were far more common than in 1955 and 1966, years of relatively high demand.

For this article, the most interesting difference between the 1966 and 1955 and 1949 results is the considerably greater influence that changes in financial market conditions had on the realization of investment plans. However, even in 1966, financial market developments accounted for only 10.9 percent of the principal factors cited by firms as responsible for appreciable downward revisions in plant and equipment expenditures and 12.4 percent of the other major factors cited. Perhaps more significantly, firms citing financial market developments as the principal factor or as a major factor in such revisions accounted for only 0.8 of 1 percent and an additional 1.9 percent, respectively, of the total number of firms responding to the questionnaire.[6] Moreover, there was some offset since, rather surprisingly, a sizable number of firms reported that unexpected changes in financial market conditions tended to increase their 1966 expenditures. A number of these firms presumably found conditions in the financial markets more favorable than they had expected, while others may have raised and spent money earlier than they had originally planned in anticipation of a further deterioration in the market.[7]

It should be noted that firms increasing expenditures as a result of financial market developments rarely gave this as the principal reason for differences between planned and actual outlays. A high proportion of the firms increasing expenditures as a result of financial market developments were operating at a very high rate of capacity utilization (as of the middle of the year), and this may have been associated with relatively favorable financial terms.

Tables 1 and 2 do not provide adequate information for even roughly estimating the quantitative impact of monetary restrictions on the realization of plant and equipment expenditures in 1966. However, they do indicate that a relatively small number of firms were appreciably affected. For purposes of estimating the national impact, it will be necessary to refer to the data presented in the following section.

However, before doing so, we may point out that tables 1 and 2 provide more detailed data than had previously been available on the relationship between the realization of sales, earnings, and plant and equipment price expectations, and the deviations between actual and anticipated plant and equipment expenditures. The last of these relationships is of particular interest, since it indicates a positive correlation between the direction of the change in plant and equipment prices (i.e., above or below expectations) and the direction of the change in the dollar value of expenditures. Apparently, higher capital goods prices are more likely to increase than to decrease the dollar value of plant and equipment expenditures, at least in the short run when demand is reasonably buoyant.

Impact of Financial Market Factors on 1966 Plant and Equipment Expenditures

Tables 3 and 4 provide the basic data needed to appraise the impact of 1966 developments in the money and capital markets on plant and equipment expenditures in that year. The most important difference between the data indicating the proportion of firms with *some* reduction in expenditures because of financial market developments (table 3 and subsequent tables) and the data indicating the proportion of firms with an *appreciable* reduction in expenditures for the same reasons (table 1 and 2) is, of course, the broader coverage of the data in table 3.[8] How-

[6] These ratios are obtained by dividing 35 and 36 (table 1, line 7) by 4,418, the total number of firms responding to the questionnaire.

[7] There is some suggestion of such an anticipatory effect in the intensified capital markets activity in June 1967, after a renewed upsurge in interest rates.

[8] It is even possible that a few firms included in table 3 experienced appreciable reductions in plant and equipment expenditures due to financial market developments but may not be included in tables 1 and 2 because of offsetting increases in expenditures due to other causes.

ever, there are also several other differences in the scope of the data presented in these two sets of tables. In their replies to the questions presented in table 3, a number of firms included the voluntary restraint on investment urged by the Administration early in 1966 as a financial development causing a reduction in their outlays, whereas such restraint was treated separately in the questionnaire data presented in tables 1 and 2. On the other hand, the coverage of financial market effects in table 3 may be less inclusive than in tables 1 and 2, both because differences in composition as well as magnitude may be reflected in tables 1 and 2, and because the indirect impact of credit restraint on the firm's investment operating through its customers may have been treated differently.

Direct and indirect effects

In addition to the direct impact that credit restraint has on investment (i.e., through the increased cost of financing), two other mechanisms may be of considerable importance: (1) an indirect, or "accelerator," effect, which occurs when a firm's sales, and therefore its capital requirements, are reduced because of the impact of financial market conditions on its customers, and (2) an "expectational," or "quasi-accelerator," effect, which arises when the firm anticipates—whether correctly or not—a subsequent reduction in sales below the level that would have occurred in the absence of credit restraint and, on the basis of that expectation, reduces its current investment.

In the replies on which table 3 is based, firms were asked to exclude indirect effects.[1] The questionnaire further attempted to distinguish cases in which the increased cost of funds was the primary consideration from those in which an unfavorable influence on expectations was most important.

[1] In contrast, firms were not specifically requested to exclude such indirect effects in their replies presented in tables 1 and 2. (These replies were obtained from the first section of the questionnaire, which followed the format of the two earlier surveys.) However, respondents to the first section of the current survey questionnaire were provided with a checklist that included such factors as the sales outlook, net earnings, and the availability and cost of debt and equity financing.

(A reduction in investment resulting directly from the higher cost of funds is considered autonomous, while one resulting from a decline in actual sales is an induced effect. The latter is particularly likely to occur for capital goods producers or for firms supplying the housing industry; however, it may also occur quite generally if the autonomous reduction in investment causes, through a multiplier relationship, a reduction in consumption. The impact of an anticipated decline in sales is autonomous in the period prior to the realization of the anticipation. However, to the extent that the anticipated effects are ultimately realized, such reductions can be regarded as induced in a longer run perspective.)

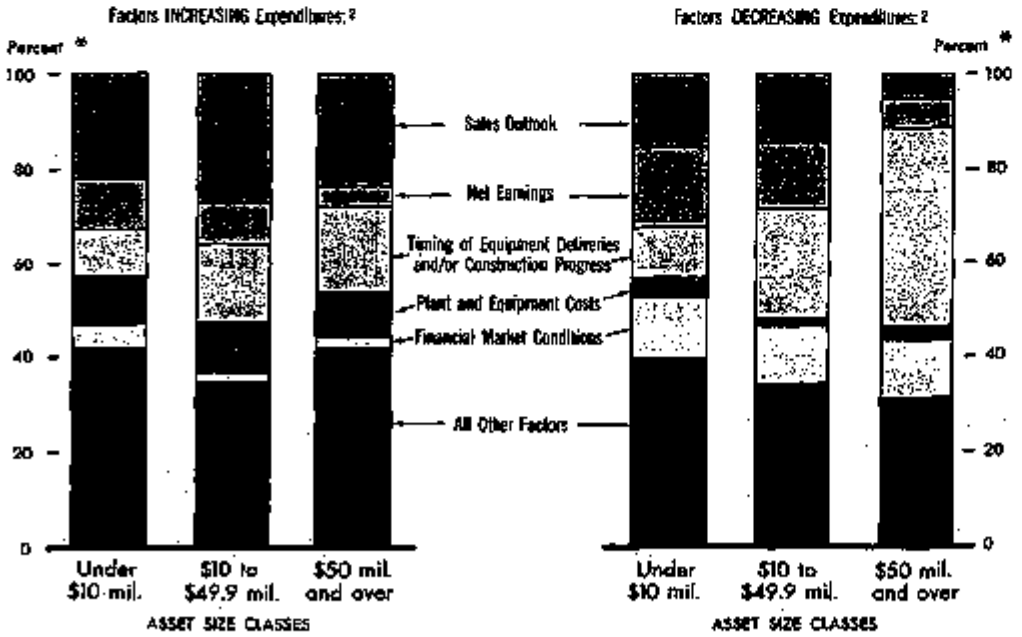
Table 3 probably includes expectational (or "quasi-accelerator") effects to a significant degree, since many firms indicated that financial market developments, by affecting the general business outlook, caused a reduction in investment and this presumably reflects an attempt by these firms to anticipate the resultant decline in their sales. The relatively high incidence of firms citing the changed business outlook as the basis for the financial market influence perhaps also indicates that, notwithstanding questionnaire instructions to exclude such cases, some companies attributed to financial market developments those reductions in investment resulting proximately from actual declines in sales and only indirectly from monetary stringency. Thus, even table 3 may contain some indirect effects, though probably not to the same extent as tables 1 and 2.

As would be expected, the proportion of firms indicating that they had made *some* reduction in expenditures because of financial market developments is considerably larger than the proportion noting an *appreciable* downward effect. (See tables 1 and 2.) It may be noted that this difference in the number indicating *appreciable* vs. *some* reduction in expenditures was relatively more pronounced for the smaller firms and less marked for the larger firms.

An internal check was made on the consistency of the answers to the parts of the questionnaire tabulated in table

CHART 7

Factors[1] Responsible for Deviations Between Anticipated and Actual Plant and Equipment Expenditures, All Industries, 1966



* Percent of factors cited by companies in each asset size class.

1. Includes "principal" as well as "other major" factors.

2. Changes in actual expenditures from anticipations reported early in 1966 in OBE-SEC survey.

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3 and those tabulated in tables 1 and 2.[10] It shows that only a few firms which attributed to financial market developments the principal responsibility for an appreciable downward adjustment in 1966 plant and equipment programs (question 2g) did not also indicate that such developments had caused at least some reduction in expenditures (question 5a). Information obtained from preliminary interviews with some of these firms suggests that when they attributed to financial market developments a responsibility for downward adjustments, they were referring to the indirect impacts of such developments through their customers; consequently, in question 5a they were specifically requested to exclude such impacts. There were more differences between the two sets of answers among firms giving financial market developments as a major but not the principal reason for an appreciable downward adjustment in outlays; most of these were among the smallest firms with less than $500,000 in plant and equipment expenditures. A higher proportion of the larger than of the smaller firms answered both questions affirmatively.

A relatively high proportion of the firms which answered that financial market developments had resulted in some reduction in their expenditures did not also indicate that as a result actual outlays were appreciably below those anticipated, either because this impact was considered to be rather small or because other factors intervened with offsetting effects. (See table 3, lines 3 and 4.) A comparison of the answers to these questions with the distribution of the percentage reduction in expenditures (lines 6a–6e) leads to the interesting inference that the smallest firms were likely to consider only disparities between actual and anticipated outlays of 10 to 25 percent or more as appreciable, whereas the largest firms were likely to consider disparities of 5 percent or more as appreciable.

[10] As one might expect, a much higher proportion of firms with 1966 plant and equipment expenditures below those programed early in that year than of other firms stated that financial market developments had occasioned some reduction in their expenditures.

Timing and magnitude of impact

Table 3 indicates that the number of firms stating that they had made some reduction in plant and equipment expenditures as a result of financial market developments increased throughout 1966. A relatively small number of firms were affected in the first quarter of the year. The rate of growth in the number affected picked up in the second and third quarters but moderated in the fourth quarter. Nevertheless, the final quarter of the year showed a peak number of firms affected in all of the four size classes.

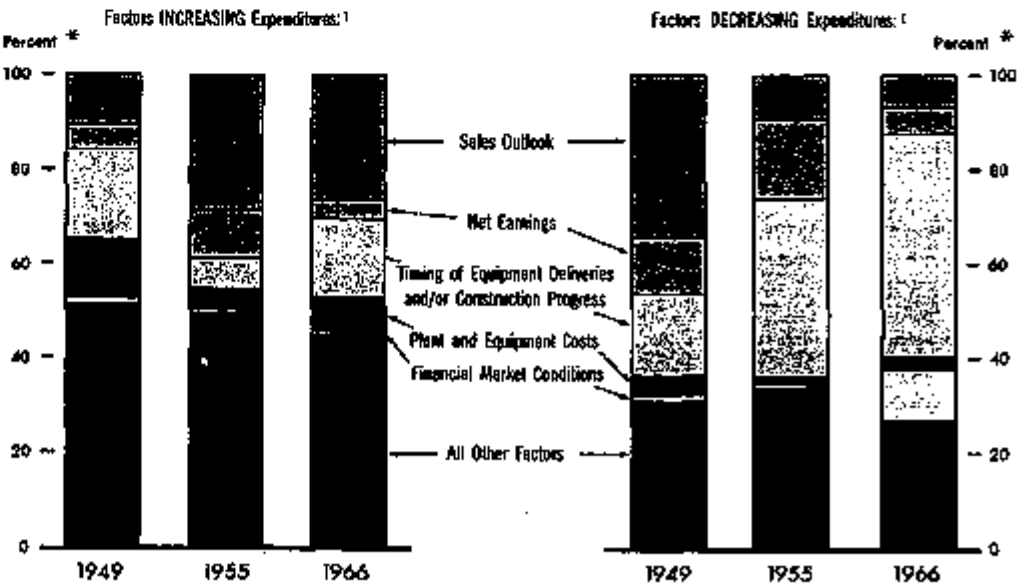
The data used to compile this table also make possible a rough estimate of the quantitative impact of monetary restrictions on plant and equipment expenditures in 1966, and constitute perhaps the first plausible evidence on the overall impact of monetary policy on such outlays during any period. Only 5.3 percent of the total number of firms responding indicated that they had made some reduction in expenditures as a result of financial market developments, and there was relatively little variation in this proportion among different size groups. (See chart 9; for basic data, see table 3, lines 1 and 3.) However, there was substantial variation in the relative magnitude of the effect for firms curtailing their expenditures, with smaller firms much more strongly influenced on the average than larger firms.

The average percentage effect for firms curtailing outlays may be approximated for nonfinancial firms within each size class from the two-way distribution of these firms by asset size and by size of the reduction due to financial market developments (table 3, lines 6a–6e) and for financial firms from a one-way distribution by size of reduction (table 4, lines 6a–6e). Two types of averages were used for this purpose, the estimated median, which probably understates the true mean, and the average obtained by assuming that the mean for each percentage reduction class interval was at its midpoint, which probably overstates the true mean.[11]

[11] For the 50 percent or more class, the average reduction—which has as its base actual plant and equipment expenditures—was assumed to be 75 percent, and this may be unduly large, again contributing to overstatement of the true mean.

CHART 8

Principal Factors Responsible for Deviations Between Anticipated and Actual Plant and Equipment Expenditures of Manufacturers, 1949, 1955, and 1966



*Percent of principal factors cited by manufacturers.

1. Changes in actual expenditures from anticipations reported early in specified year in OBE-SEC survey.

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On the basis of the medians, the average percentage reduction for affected firms ranged from 19.1 percent for the smallest nonfinancial firms to 9.0 percent for the largest nonfinancial firms. On the basis of the second set of averages, the corresponding figures ranged from 27.8 percent to 13.2 percent.

Estimation of national impact for 1966

The overall impact of monetary restrictions on plant and equipment expenditures in 1966 was estimated by first computing the sample ratio of the reduction in expenditures resulting from financial market developments to the aggregate outlays in each size class of nonfinancial business and in all financial business and then multiplying this ratio by the universe distribution of plant and equipment outlays among these categories. The sample ratio for each size class of nonfinancial business is obtained by multiplying the average percentage reduction of affected firms by the plant and equipment expenditures of affected firms and dividing by total plant and equipment expenditures of all sample firms in that size class. The corresponding ratio for financial business is obtained simply as the product of the percentage of all sample financial firms reporting some reductions in expenditures as a result of financial market developments and the average percentage reduction of affected firms in that industry (with both percentages expressed in ratio form).

Reasonably reliable data are available on the universe distribution of plant and equipment outlays in nonfinancial business by asset-size class and in financial business as a whole for the $60.6 billion aggregate of expenditures in 1966 covered by the periodic OBE–SEC surveys—which is essentially the universe sampled in our special survey. However, perhaps a more useful universe for purposes of general economic analysis is the comprehensive total of $75.0 billion for nonfarm nonresidential fixed investment appearing in the national income and product accounts and including outlays of nonprofit institutions, real estate companies and professionals, capital outlays in oil and gas well drilling charged to current account, and a number of smaller items. The estimated size distribution of the difference between the national accounts aggregate and the investment covered by the periodic surveys is subject to considerably more error than the OBE–SEC distribution but not enough to affect our results significantly.

If we use the $75.0 billion total and assume that the survey results are representative of all industries included in the national accounts aggregate, the estimated reduction in 1966 plant

Table 2—Principal Factors Responsible for Deviations Between Anticipated

Number of firms reporting changes from expectations in—	Nonfinancial firms only							
	Under $1,000,000 assets				$1,000,000 to $9,999,999 assets			
	Increasing outlays [2]	Decreasing outlays [2]	Increasing outlays [2]	Decreasing outlays [2]	Increasing outlays [2]	Decreasing outlays [2]	Increasing outlays [2]	Decreasing outlays [2]
	Number [4]		Percent		Number [4]		Percent	
1. Sales outlook	14	2	27.5	12.5	40	7	24.7	8.6
Firms with sales above expectations	13	0			37	1		
Firms with sales below expectations	1	2			1	5		
Firms not specifying direction	0	0			2	0		
2. Current expenses	0	2	.0	12.5	6	2	3.7	2.5
3. Net earnings	6	2	11.5	12.5	10	10	6.2	11.4
Firms with earnings above expectations	5	0			8	0		
Firms with earnings below expectations	1	2			2	10		
Firms not specifying direction	0	0			0	0		
4. Working capital requirements	1	1	2.0	6.2	8	7	4.9	3.8
5. Timing of deliveries and/or construction progress	6	2	3.8	12.5	34	23	8.6	36.1
6. Plant and equipment costs (rtc, prices paid)	3	0	5.9	.0	10	4	5.2	4.5
Firms with costs above expectations	3	0			10	1		
Firms with costs below expectations	0	0			0	1		
Firms not specifying direction	0	0			0	2		
7. Financial market conditions	2	2	3.9	12.5	1	33	.6	14.8
Firms mentioning availability and cost of debt financing	2	1			0	13		
Firms mentioning availability and cost of equity financing	0	1			1	1		
8. Technological developments	2	0	3.9	.0	18	2	12.1	3.4
9. Investment tax credit [5]	0	0	.0	.0	2	7	1.2	3.9
10. Mergers or acquisitions [5]	2	0	3.9	.0	15	2	9.2	2.3
11. Routine underestimation or overestimation [5]	4	3	7.9	18.8	27	4	16.5	6.5
12. Accidental damage [5]	5	0	9.8	.0	4	0	2.5	.0
13. All other factors	7	2	13.7	12.5	17	5	10.5	5.8
Totals [5]	51	16	100.0	100.0	162	86	100.0	100.0

1. Based on "principal" factors cited by firms answering "yes" to question: "Were your actual 1966 expenditures for plant and equipment changed appreciably, either in terms of aggregate dollar amount or in composition or form, from those expected early that year?"
2. Includes financial institutions as well as a small number of nonfinancial firms for which asset-size information was not available.
3. Increasing (decreasing) outlays refer to 1966 expenditures higher (lower) than those anticipated by the firm in early 1966.

and equipment expenditures as a result of financial market developments ranges from $370 million if the sample median percentage reductions are used to $560 million if the sample "means" are used; the average is somwhat under $500 million.[12]

This estimate of the effect of financial market developments on 1966 plant and equipment expenditures, although probably the best available, is still subject to a considerable margin of error. Even if the data reported by the sample were impeccable, the blowup procedures might bias the results somewhat in either direction. On the one hand, such items as plant and equipment outlays of nonprofit institutions and professionals and capital outlays for oil and gas well drilling charged to current account seem likely to be relatively insensitive to monetary restrictions; these items represent well over half of the difference between the national accounts aggregate and the investment covered by the periodic surveys. On the other hand, the capital outlays of real estate companies, which constitute somewhat under one-fifth of this difference, are probably quite sensitive.

Another possible source of error is reporting bias. It could be argued that there is some incentive to exaggerate the effect of monetary tightness since any deflationary type of Government intervention may be unpopular in the business community, but there is no reason to believe that any such bias is significant. Furthermore, if such a bias exists at all, it would seem more likely to overstate than to understate the estimated reduction in 1966 plant and equipment expenditures.

It could also be argued, in spite of the relatively high response rate in the special survey, that the nonrespondents might have reacted differently from the respondents. Here again it might be anticipated that, other things being equal, firms significantly affected by financial market developments would be the most likely to fill in the questionnaire (at least when size of firm is held constant). On the other hand, some firms may have been deterred from giving an affirmative answer on the effect of financial market developments by the larger number of questions they were asked.[13]

As was previously mentioned, a number of firms classified the voluntary restraint on investment urged by the

[12] Using the less inclusive $50.8 billion total, for which the survey results are more representative, the estimated reduction ranges from $300 million to $460 million.

[13] However, firms could indicate that they had reduced their 1966 (or 1967) investment because of financial market developments in 1966 without answering the subsequent, more detailed questions—an option that a few companies followed.

and Actual Plant and Equipment Expenditures in 1966 [1] by Asset Size of Firm

Nonfinancial firms only—Continued								All firms [2]			
$10,000,000 to $49,999,999 assets				$50,000,000 assets and over							
Increasing outlays [3]	Decreasing outlays [3]	Increasing outlays [4]	Decreasing outlays [3]	Increasing outlays [3]	Decreasing outlays [3]	Increasing outlays [3]	Decreasing outlays [3]	Increasing outlays [3]	Decreasing outlays [3]	Increasing outlays [3]	Decreasing outlays [3]
Number [4]		Percent		Number [4]		Percent		Number [4]		Percent	
31	7	38.3	18.4	25	5	28.2	4.9	112	21	29.6	6.5
27	0			20	1			98	2		
3	7			4	4			6	19		
4	0			2	0			8	0		
2	0	2.4	.8	1	0	1.1	.9	3	6	2.1	1.6
2	4	2.4	5.7	2	2	.6	1.6	18	18	4.3	5.6
2	1			0	0			15	1		
0	3			0	2			2	16		
0	1			0	0			0	1		
0	3	.9	4.2	2	4	2.3	3.2	11	15	2.6	4.7
15	32	17.6	45.7	17	79	19.1	63.7	69	154	16.3	47.8
7	1	8.2	1.4	3	2	3.9	1.6	31	8	7.3	2.5
6	0			5	0			26	1		
0	1			0	1			1	4		
1	0			2	1			4	3		
0	7	.9	10.0	1	12	1.1	9.7	4	25	.9	10.9
0	6			0	12			2	21		
0	1			1	0			2	4		
2	2	2.4	2.9	2	1	2.3	.8	27	6	6.4	1.9
5	6	.0	8.6	4	3	.8	2.4	2	16	.5	5.0
10	2	11.8	2.9	14	4	11.3	3.2	49	8	9.5	2.5
3	0	3.5	.0	7	1	5.6	.8	31	9	7.3	2.8
2	1	2.4	1.4	0	0	.0	.0	11	1	2.6	.3
11	5	12.9	7.1	17	11	13.1	8.9	58	26	13.7	8.1
85	70	100.0	100.0	69	124	100.0	100.0	422	322	100.0	100.0

4. Not all firms specified the principal factor. Where only one major factor was indicated, this was taken to be the principal one.
5. Specified under "other factors" in the questionnaire.
6. Percentage components may not add to 100 percent because of rounding.

Sources: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

260-053 O - 67 - 2

Administration as a financial development that caused a reduction in their outlays; this would tend to overstate somewhat the estimated effect of monetary tightness in 1966. Similarly, the absence of quantitative data on the extent to which financial market developments increased planned expenditures, largely through anticipatory effects, results in some, though presumably a small, overstatement of the effect of monetary tightness. As an offset, neither the regular OBE–SEC survey nor the special followup survey includes new businesses or businesses that did not get started because of monetary stringency. This would probably tend to understate somewhat the overall impact of the 1966 developments on capital outlays by U.S. industry, but again the effect is likely to be small.

On balance, the $500 million figure appears to be a reasonable estimate of the 1966 impact on this sector of the economy. Although this figure might be subject to an error of as much as 50 percent in either direction, the total impact is obviously a very small fraction of aggregate plant and equipment expenditures.

The $500 million estimate is, of course, designed to cover only the direct effects of financial market developments on 1966 plant and equipment expenditures. This figure would presumably have to be increased somewhat as an estimate of the total effect of monetary and credit stringency on plant and equipment expenditures if complete allowance were made for indirect effects. The total impact on 1966 GNP would of course be moderately larger than the investment reductions because of the short-run multiplier effect of these reductions on business activity generally.

Impact by size of firm

As was noted earlier, although there did not appear to be much difference in the proportion of smaller and larger firms affected at least to some extent by monetary tightness in 1966, the relative magnitude of the effect was much greater for the smaller firms. This presumably reflects mainly the readier access of the large firms to the financial markets, particularly in a period of credit rationing, but it may also reflect a greater ability of the larger firms to predict financial market developments.

Only about one-fourth of the firms that reduced their plant and equipment expenditures in 1966 as a result of financial market developments did not plan to carry out some of this postponed investment in 1967. The proportion of expenditures either canceled or postponed beyond 1967 was higher for the smaller asset classes than

Table 3.—Reductions in 1966 Plant and Equipment Expenditures Resulting From 1966 Financial Market Developments: Number of Firms by Asset Size

	Nonfinancial firms only					All firms [1]
	Under $1,000,000	$1,000,000 to $9,999,999	$10,000,000 to $49,999,999	$50,000,000 and over	All sizes	
1. All firms answering question on 1966 impact of financial market developments (question 5a) [2]	847	1,633	817	783	3,980	4,275
2. Number indicating no reductions (question 5a) [2]	802	1,439	773	588	3,602	4,027
3. Number indicating reductions in plant and equipment expenditures because of financial market developments (question 5a) [2]	45	94	44	37	220	238
4. Number indicating both reductions in plant and equipment expenditures (question 5a) and financial market conditions as a factor accounting for an appreciable deviation between actual and planned expenditures (question 5g) [2]	19	35	20	25	99	101
5. Number indicating significant reductions occurring in (question 6) [2,3]:						
a. First quarter	3	7	6	2	18	18
b. Second quarter	7	25	7	8	47	49
c. Third quarter	27	63	28	24	142	149
d. Fourth quarter	31	69	35	30	165	170
6. Number indicating reductions amounting to (question 7) [2]:						
a. Less than 5 percent of actual plant and equipment expenditures	4	4	8	9	25	25
b. 5 percent to 9.9 percent	7	22	11	12	52	54
c. 10 percent to 24.9 percent	14	38	18	10	78	80
d. 25 percent to 49.9 percent	6	15	6	5	32	34
e. 50 percent or more	7	12	2	0	21	22
f. Amount not specified	7	3	2	1	13	14
7. Number expecting to carry out in 1967 (question 10) [2]:						
a. None of the eliminated 1966 plant and equipment expenditures	9	28	12	4	53	54
b. Some of the eliminated 1966 plant and equipment expenditures	17	45	19	20	101	106
c. Most of the eliminated 1966 plant and equipment expenditures	8	9	7	11	36	35
d. All of the eliminated 1966 plant and equipment expenditures	4	3	1	1	9	9
e. Not specified	6	9	5	1	21	22
8. Number mentioning as cause of reductions (question 9) [2]:						
a. Rise in interest rates, total [4]	30	71	35	27	163	167
Business outlook effect	24	31	10	7	72	76
Cost of financing effect	17	59	28	22	126	126
b. Decline in the stock market, total [4]	8	15	7	6	35	36
Business outlook effect	8	11	4	3	26	26
Cost of financing effect	3	4	3	4	14	14
c. Difficulties in raising funds from financial institutions, total [4]	31	41	18	15	95	95
Unattractiveness of lending conditions (other than interest rates)	7	17	5	4	33	33
Unwillingness of institution to supply desired funds	16	29	13	11	69	69
d. Difficulties in raising funds from capital markets, total [4]	2	8	4	5	19	19
Unattractive terms (other than offering price or yield)	1	4	3	2	10	10
Unwillingness of underwriters to handle issue	1	4	1	1	7	7
e. Other financial market developments	11	20	6	6	43	43

1. Includes financial institutions as well as a small number of nonfinancial firms for which asset-size information was not available.
2. Question numbers refer to questionnaire (see Technical Notes).
3. Some firms indicated more than 1 quarter.
4. Includes firms which indicated both, or which did not distinguish between, (a) business outlook and cost of financing effects and/or (b) unattractiveness of lending conditions and unwillingness of institutions to supply desired funds.

Sources: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

for the largest. A relatively small proportion of firms in all size classes planned to restore in 1967 all of the cutbacks in their 1966 plant and equipment programs related to financial market developments. The great majority of the firms planned to make up "some" or "most" of these 1966 investment reductions in 1967, with "some" a more common response than "most," particularly for the smaller size classes.

Interest rates most important

The firms that indicated a reduction in their 1966 plant and equipment expenditures as a result of financial market developments most commonly attributed the reduction to the rise in interest rates. The rise in interest rates was considered important more often because of its impact on the firm's cost of borrowing than because of its influence on the firm's appraisal of the general business outlook. This was especially true of the firms in the larger size classes, which were much less concerned than the smallest companies with the impact of higher interest rates on the general business outlook. It may be recalled that the impact on the firm's cost of borrowing is more clearly autonomous than the influence on the firm's appraisal of the general business outlook, much of which may be regarded as indirect at least in a longer run perspective.

The second most common reason given for the reduction in 1966 expenditures was difficulty in raising funds from banks or other financial institutions, a type of capital rationing effect; this again is addressed primarily to the cost of borrowed rather than equity funds. Here, the unwillingness of institutions to supply the desired funds seemed more important than the unattractiveness of lending conditions other than interest rates.

The decline in the stock market was cited much less frequently as a financial market development accounting for the reduction in 1966 expenditures, and difficulty in raising funds from the capital markets (either stock or bond) was cited even less often. It is interesting, though perhaps not surprising, that unlike the situation in the bond market, the decline in the stock market was considered important more often because of its effect on the firm's appraisal of the general business outlook than because of its implications for the firm's cost of equity capital. However, this was more true of firms in the smallest size class than of firms generally. Although there were no consistent differences in the proportions of companies in the various size classes that were affected by stock market developments, it should be noted that this finding has no necessary implications for the relative access to stock financing by smaller firms, since such firms may have planned to rely less on stock issues for financing their capital programs than the larger companies.

Industry differences

Table 4 presents a breakdown by industry rather than by assets for firms stating that they had made some reduction in 1966 plant and equipment expenditures as a result of financial market developments. In view of the relatively small number of firms indicating some reduction, only five industry groups are segregated, viz., manufacturing, utilities (including communications), finance, trade, and an all-other category, which includes railroads, airlines, trucking, pipelines, construction, services, and mining. The proportion of firms affected by monetary restrictions in 1966 was greater for the utilities than for any other group. This apparently cannot be attributed to the larger average size of the utilities since, at least for nonfinancial industries combined, there was not much difference in the proportion of smaller and larger firms affected by monetary tightness in 1966. In contrast, the relative magnitude of the reduction in 1966 outlays was smaller for the typical utility firm than for other firms; however, it is not possible to determine the extent to which this simply reflects the larger average size of the utilities.

For the utilities, the rise in interest rates was somewhat more important and the decline in the stock market somewhat less important than for the other firms which stated that they had reduced their 1966 plant and equipment expenditures because of financial market developments. Moreover, to a much greater extent in the utilities than in the other industries, it was the cost of financing rather than the business outlook effect that predominated.

Other findings for 1966

For the firms indicating reduced 1966 plant and equipment expenditures due to financial market developments, some additional breakdowns were carried out: Actual sales and earnings were related to expectations (above or below expectations as indicated by questions 2a* and 2c**), and manufacturing firms were classified by the percentage of capacity utilized (in June 1966 as indicated in periodic reports to OBE–SEC). The more interesting findings may be summarized briefly. A very much higher proportion of firms with sales or earnings below expectations than of firms with sales or earnings above expectations stated that they had cut their expenditures because of financial developments. Similarly, firms operating at a low percentage of capacity were more prone to reflect the effects of monetary tightness than firms generally, and the magnitude of the impact was also likely to be greater.

Effects on 1967 Plant and Equipment Programs

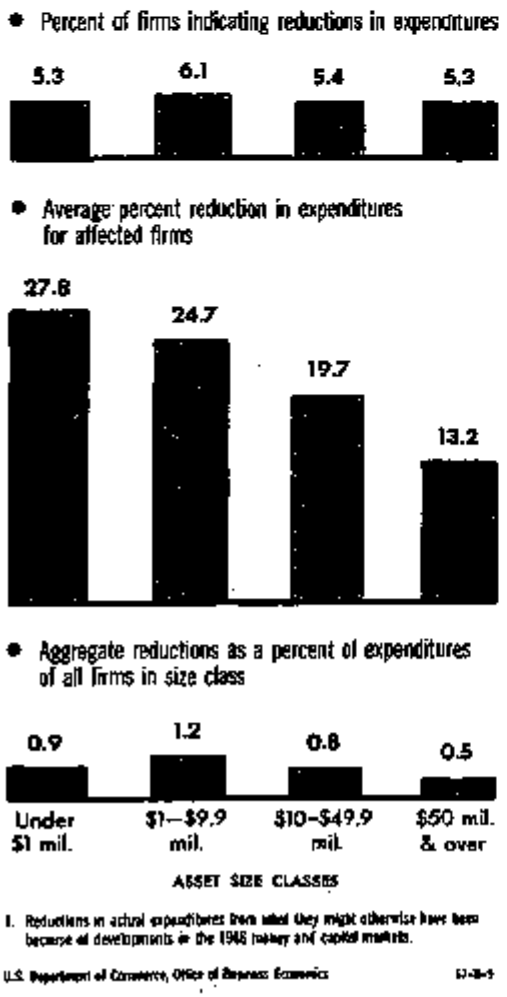
The impact of 1966 financial market conditions was somewhat stronger on anticipated plant and equipment expenditures for 1967 than on actual 1966 expenditures. Table 5 presents basic data on the number of firms reporting reductions in 1967 investment plans, the magnitude of these reductions, and the particular aspects of financial market conditions that were primarily responsible. Table 6 shows comparative data, derived from tables 3 and 5, on the effects of credit stringency on 1966 investment and 1967 investment plans. (See also chart 10.)

For all firms combined, including fi-

nancial institutions, the percentage of respondents indicating a reduction in plant and equipment expenditures rose from 5.3 percent for 1966 to 8.5 percent for 1967. There was little variation among size groups, except that the $1 million to $10 million asset class showed higher proportions than other classes in both years. The average percentage reduction for affected firms declined steadily with size in both years but less sharply in 1967. The aggregate reduction ranged from one-half of 1 percent of aggregate expenditures to a little over 1 percent in 1966 and from 1 to 2 percent in 1967, doubling for the largest size class but showing smaller increases elsewhere.

CHART 9

Reductions in 1966 Plant and Equipment Expenditures Resulting From 1966 Financial Market Developments[1]



1. Reductions in actual expenditures from what they might otherwise have been because of developments in the 1966 money and capital markets.

U.S. Department of Commerce, Office of Business Economics 67-8-9

Estimated national impact for 1967

An estimate of the dollar reduction in 1967 investment plans for the Nation as a whole may be obtained by a procedure similar to that described for estimating the overall impact on 1966 plant and equipment outlays. Under the assumption that the 1967 programs of firms reporting reductions were on the average similar in magnitude to the 1966 expenditures of the same firms, the reduction within each size class of nonfinancial business can be estimated for the sample from the 1966 outlays of the affected firms and from the average percentage reduction reported in 1967 programs.[14] The total reduction for financial institutions in the sample may also be obtained in much the same way.

As was indicated previously, nationwide estimates of plant and equipment expenditures derived from the national income and product accounts are available for 1966 by size class for nonfinancial business and for financial business as a whole (though the universe figures represent a somewhat broader coverage of industries and expenditure items than the OBE–SEC series and the sample results are therefore not fully representative of the universe). Multiplying the sample reduction in 1967 programs by the 1966 ratio of universe outlays to outlays for all sample firms within each class and summing over classes, we obtain an estimated reduction of $940 million in 1967 programs for nonfarm fixed business investment.

This is probably subject to some upward bias for reasons already indicated in our discussion of the method of calculation. Furthermore, since less than 30 percent of the firms with reduced 1966 outlays were included among those reducing 1967 programs, a partial offset to the estimated reduction presumably results from the fact that one-fifth of the former group expected to carry out most or all of the eliminated projects during 1967, while an additional 50 percent planned to carry out at least some of the eliminated investment. Thus, the net effect of the 1966 credit stringency on 1967 plant and equipment programs may be well under $1 billion.[15] The margin of error in the $940 million estimate may be as much as 50 percent in the downward direction but less in the upward direction because of the predominance of considerations that are expected to lead to upward bias.[16] It is quite likely that, in view of the wording of the questionnaire, this figure includes a somewhat higher proportion of indirect effects than the estimate for 1966.

The relatively slow reaction of the largest firms to the 1966 credit stringency is suggested by the greater increase from 1966 to 1967 in the aggregate percentage reduction in fixed investment, as compared with smaller firms. This slow reaction is not unexpected in view of the greater formality and rigidity of the capital programs of the largest firms, the long lead times for much of their equipment, and perhaps their more advanced arrangements for financing. This evidence of a lag in the response of larger firms confirms the suggestion implicit in the distribution by quarters of reductions in 1966 investment. It may be noted from lines 5c–5d of table 3 that the number of

[14] The average percentage reduction of affected firms, which has as its base programs after the reduction due to credit stringency, was computed from the frequency distribution in lines 4a–4c of table 5—utilizing the midpoint for each closed-end class interval and a value of 75 percent for the open-end interval. This procedure probably leads to some upward bias in the average, which considerably exceeds the estimated *median* for the frequency distribution. Further overstatement of the aggregate sample reduction in 1967 programs may arise because the programs of the firms affected, since they are known to have been reduced because of credit restraint, may in fact be expected to fall a little short of the 1966 expenditures of these firms. However, an offsetting consideration is the prospective moderate rise in 1967 investment expenditures over 1966 as reported in the OBE–SEC survey.

[15] This is much smaller than the estimated impact on 1967 plant and equipment programs of the suspension of the investment tax credit and of certain accelerated depreciation procedures. According to a special OBE–SEC survey on the impact of the investment tax credit suspension (enacted November 8, 1966, and retroactive to October 10, 1966), it was estimated that 1967 plant and equipment expenditures would be reduced by $2.3 billion. It should be noted that this survey was undertaken before the suspension was revoked in June 1967 retroactive to March 10, 1967.

[16] The estimated national impact is more subject to upward bias for 1967 programs than was the case for 1966 outlays. First, for affected firms the average percentage reduction used in the computations was based on the midpoints of class intervals (whereas in the 1966 estimate an intermediate value between the upward-biased average and the downward-biased median was used). Secondly, the offset—in terms of the high proportion of firms adding some or all of the expenditures eliminated in 1966 to their 1967 programs—is believed to be larger in 1967 (though even in 1966 some offset existed since a few firms reported increases in capital programs as a result of credit restraint). It may be inferred that a very substantial proportion of firms reporting reductions in 1966 but not in 1967 programs must have increased the latter as a result of 1966 credit conditions. Even firms reporting reductions in both years may have failed to "net out" the expenditures postponed from 1966 to 1967 in reporting the reductions in their 1967 programs, thus overstating the impact on the latter.

firms reporting reductions rose by one-fourth from the third to the fourth quarter of 1966 for the two largest size classes but only by about half that percentage for the smaller firms.

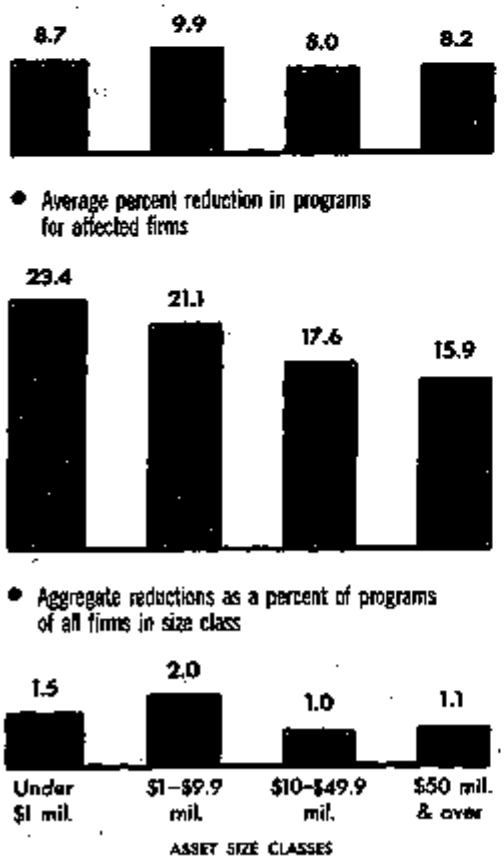
Business outlook more important

The responsibility attributed to particular aspects of 1966 credit conditions is much the same for reductions in 1967 programs as for reductions in 1966 expenditures, but some differences may be noted. (See table 6, lines 4–7.) For the two largest size groups, the proportion of affected firms mentioning the rise in interest rates is substantially higher in the case of the 1967 programs, rising to between 87 percent and 90 percent. However, the increase is due almost entirely to those mentioning the business outlook rather than the cost of financing and thus probably reflects in large part indirect or expectational effects associated with actual or expected failure of sales to grow as rapidly as in the absence of credit restraints.

Difficulty in raising funds from intermediaries is mentioned less frequently, particularly by the largest and smallest firms, but it is still an important factor for over one-third of the firms reducing 1967 programs. The effect of the stock market decline is higher than in 1966 for the two middle size groups, affecting more than one-fifth of the firms in this range, but lower for the two extreme groups. As in the case of interest rates, the business outlook aspect increases in importance from 1966 to 1967 relative to the cost aspect, particularly for the larger firms.

CHART 10

Reductions in 1967 Plant and Equipment Expenditure Programs Resulting From 1966 Financial Market Developments[1]



1. Reductions in planned 1967 expenditures from what they might otherwise have been because of developments in the 1966 money and capital markets.

U.S. Department of Commerce, Office of Business Economics 67-8-10

Effects on Inventory Investment

The impact of 1966 credit conditions on 1966 inventory investment appears to be about the same in dollar value as on fixed investment, and again there is some suggestion of an increased reaction in 1967. Table 7 presents basic data on the frequency and magnitude of reported reductions in 1966 inventory investment and on the particular financial market conditions to which these were attributed, while table 8 compares the effects of credit stringency on actual 1966 and planned 1967 inventory investment.

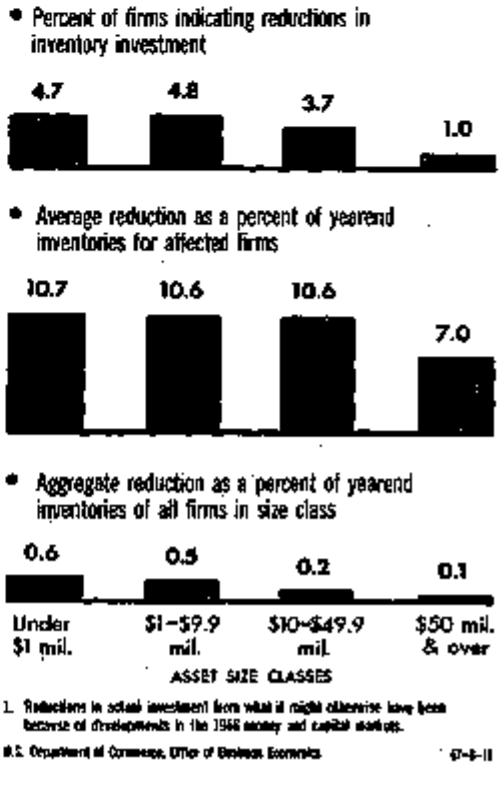
For all firms combined, including financial institutions, only 3.7 percent of the respondents and only 1.0 percent of firms with assets over $50 million reported reductions in 1966 inventory investment. However, the percentage for all firms rose to 6.6 percent for 1967 investment plans. The largest firms showed the greatest increase though they still reported reductions less frequently than smaller firms, especially those in the $1 million to $10 million asset size class (chart 11). In both years, the percentage of firms affected was higher for the trade group than for other major industry groups (table 9).

When reductions occurred, their average size was surprisingly large. In 1966, they amounted to almost 11 percent of end-of-year inventory levels for the three smallest size classes and 7 percent for the largest, with three-eighths of the firms indicating reductions in excess of 10 percent.[17] Information as to the magnitude of the reduction was not available for 1967 investment plans. Some firms may have reported their 1966 reductions as percentages of their

[17] The average percentage reduction, which has as its base actual yearend inventories at book value, was computed from the frequency distribution shown in lines 5a–5d of table 7, utilizing the midpoints of the closed-end class intervals. The open-end interval is troublesome in this case because of the apparently high relative frequency (which may be due to misinterpretation of the questionnaire). An estimated mean of 20 percent, which is probably on the high side, was arbitrarily assigned to this class.

CHART 11

Reductions in 1966 Inventory Investment Resulting From 1966 Financial Market Developments[1]



1. Reductions in actual investment from what it might otherwise have been because of developments in the 1966 money and capital markets.

U.S. Department of Commerce, Office of Business Economics 67-8-11

1966 inventory investment rather than their total yearend holdings; in that case, the estimate derived below of the overall impact on 1966 inventory outlays may represent a considerable overstatement.

The aggregate reduction in 1966 inventory investment within each size class of nonfinancial business may be estimated for the sample from the yearend inventory holdings of affected firms and the average percentage reduction that they reported in these holdings. Expressed as a fraction of yearend stocks of all responding firms, the aggregate reduction decreased sharply with size from 0.6 percent to 0.1 percent.

Estimation of national impact

Utilizing a distribution by size class of the nationwide estimate of $151 billion for inventories held by nonfarm, nonfinancial business in 1966, we estimated the overall impact of credit restraint on outlays for such inventories in that year by multiplying the aggregate sample reduction in dollar terms, as described above, by the ratio of universe-to-sample inventory levels for each size class and summing over

Table 6.—Impact of 1966 Financial Market Developments on 1966 Plant and Equipment Outlays and 1967 Programs, Nonfinancial Firms by Asset Size

[By percent]

	1966 outlays—Firms with assets of—				1967 programs—Firms with assets of—			
	Under $1,000,000	$1,000,000 to $9,999,999	$10,000,000 to $49,999,999	$50,000,000 and over	Under $1,000,000	$1,000,000 to $9,999,999	$10,000,000 to $49,999,999	$50,000,000 and over
1. Percentage of firms indicating reduction in outlays	5.3	5.1	5.4	5.3	8.8	10.0	8.0	8.7
2. Average percentage reduction for affected firms [1]	27.8	25.3	19.7	13.2	23.4	21.1	17.5	15.9
3. Aggregate reduction as a percentage of outlays for all firms in size class [2]	.92	1.19	.82	.50	1.46	2.00	1.04	1.06
4. Percentage of affected firms mentioning rise in interest rates as cause of reduced outlays	66.7	76.5	70.5	73.0	60.0	78.6	85.9	90.0
5. Percentage of affected firms mentioning decline in stock market	17.8	16.0	15.9	16.2	11.7	23.4	21.3	11.7
6. Percentage of affected firms mentioning difficulties in raising funds from financial institutions	40.7	43.6	40.9	40.5	33.3	38.7	37.7	33.0
7. Percentage of affected firms mentioning difficulties in raising funds from capital markets	4.4	8.5	9.1	13.5	2.3	5.8	8.2	5.0

1. Computed from the frequency distributions in lines 6a–6e of table 3 and lines 4a–4e of table 5, using the midpoint of closed-end class intervals and a value of 75 percent for the open-end interval. This procedure probably leads to some overstatement of the average.
2. Computed by multiplying line 2 by 1966 plant and equipment expenditures of firms reporting reduction and dividing by expenditures of all firms. In the case of 1967 programs there is an implicit assumption that, for firms reporting reduction, these programs on the average were similar in magnitude to 1966 expenditures of the same firms (see text).

Sources: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

Table 7.—Reductions in 1966 Inventory Investment Resulting From 1966 Financial Market Developments: Number of Firms by Asset Size

	Nonfinancial firms, only					All firms [1]
	Under $1,000,000	$1,000,000 to $9,999,999	$10,000,000 to $49,999,999	$50,000,000 and over	All sizes	
1. All firms answering question on 1966 impact of financial market developments on inventory expenditures (question 5b) [2]	918	1,690	903	687	3,899	4,047
2. Number indicating no reduction (question 5b) [2]	790	1,428	773	636	3,651	3,799
3. Number indicating reduction (question 5b) [2]	28	72	31	7	148	148
4. Number indicating significant reductions occurring in (question 5) [2,3]:						
a. First quarter	3	6	2	0	11	11
b. Second quarter	6	21	5	1	33	33
c. Third quarter	26	51	19	3	99	99
d. Fourth quarter	23	59	28	6	116	116
5. Number indicating reduction amounting to (question 5) [2]:						
a. Less than 2 percent of actual 1966 year-end inventories	4	4	0	0	8	8
b. 2 percent to 4.9 percent	8	15	9	4	36	36
c. 5 percent to 9.9 percent	8	21	10	2	41	41
d. 10 percent or more	13	29	10	1	53	53
e. Amount not specified	0	1	1	0	2	2
6. Number mentioning as cause of reduction (question 5) [2]:						
a. Rise in interest rates, total [4]	20	63	23	7	122	122
Business outlook effect	22	33	12	3	71	71
Cost of financing effect	19	53	17	6	95	95
b. Decline in the stock market, total [4]	11	15	5	1	32	32
Business outlook effect	11	12	4	1	28	28
Cost of financing effect	4	3	1	0	8	8
c. Difficulties in raising funds from financial institutions, total [4]	20	32	14	0	66	66
Unattractiveness of lending conditions (other than interest rates)	5	15	6	0	26	26
Unwillingness of institutions to supply desired funds	15	21	11	0	47	47
d. Difficulties in raising funds from capital markets, total [4]	2	4	2	0	8	8
Unattractiveness of terms (other than offering price or yield)	1	3	1	0	5	5
Unwillingness of underwriters to handle issue	1	1	1	0	3	3
e. Other financial market developments	4	15	5	0	24	24

1. Includes financial institutions as well as a small number of nonfinancial firms for which asset-size information was not available.
2. Question numbers refer to questionnaire (see Technical Notes).
3. Some firms indicated more than one quarter.
4. Includes firms which indicated both, or which did not distinguish between, (a) business outlook and cost of financing effects and/or (b) unattractiveness of lending conditions and unwillingness of institutions to supply desired funds.

Sources: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

classes. This procedure yields a value in the neighborhood of $500 million, which must, however, be considered subject to an even larger margin of error than are plant and equipment outlays.[18] In view of the greater number of firms reporting reductions in 1967 inventory investment plans than in 1966 investment, the overall impact on planned additions to inventory for the current year may be expected to exceed $500 million, but data for a more precise estimate are not available.

[18] The figure is relatively sensitive to the treatment of the rather large open-end interval in the frequency distribution of the percentage reduction for affected firms. It varies from $440 million, if in computing the average percentage reduction we assign a value of 15 percent to all firms in the range over 10 percent, to $630 million, if we assign a value of 20 percent.

Size effects

Even more than in the case of fixed investment outlays, there is evidence of relatively slow reaction by the larger firms, with the number reporting reductions in inventory investment in the fourth quarter of 1966 increasing very substantially over the third quarter for the two larger size groups but not for the smaller firms (table 7). Furthermore, the largest size group experienced by far the greatest increase in the proportion indicating reductions in 1967 inventory investment plans as com-

Table 8.—Impact of 1966 Financial Market Developments on 1966 Inventory Investment and 1967 Inventory Plans, Nonfinancial Firms by Asset Size

[By percent]

	1966 investment—Firms with assets of—				1967 investment plans—Firms with assets of—			
	Under $1,000,000	$1,000,000 to $9,999,999	$10,000,000 to $49,999,999	$50,000,000 and over	Under $1,000,000	$1,000,000 to $9,999,999	$10,000,000 to $49,999,999	$50,000,000 and over
1. Percentage of firms indicating reduction in investment	4.8	4.8	3.7	1.0	6.4	6.7	6.2	5.0
2. Average percentage reduction for affected firms [1]	10.7	11.0	10.5	7.0	(2)	(2)	(2)	(2)
3. Aggregate reduction as a percentage of inventory holdings of all firms in size class [3]	.64	.50	.20	.11	(2)	(2)	(2)	(2)
4. Percentage of affected firms mentioning rise in interest rates as cause of reduced investment	74.4	87.5	76.7	100.0	87.1	81.0	93.5	91.2
5. Percentage of affected firms mentioning decline in stock market	23.3	30.8	16.7	(4)	22.4	25.0	22.9	14.7
6. Percentage of affected firms mentioning difficulties in raising funds from financial institutions	51.3	44.4	46.7	(4)	38.1	40.6	37.0	20.6
7. Percentage of affected firms mentioning difficulties in raising funds from capital markets	5.1	5.6	6.7	(4)	9.5	6.0	4.3	5.9

1. Computed from the frequency distribution in lines 5a-5d of table 7, using the midpoint of closed-end class intervals and a value of 20 percent for the open-end interval. This procedure probably leads to some overstatement of the average.
2. Not available.
3. Computed by multiplying line 2 by end-of-year inventory of firms reporting reduction and dividing by end-of-year inventory of all responding firms.
4. Percentage not meaningful due to size of sample.

Sources: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

Table 9.—Reductions in 1966 Inventory Investment Resulting From 1966 Financial Market Developments; Number of Firms by Major Industry

	Manufacturing	Trade	All other	All industries
1. All firms answering question on 1966 impact of financial market developments on inventory expenditures (question 5b) [2]	2,013	883	1,151	4,047
2. Number indicating no reduction (question 5b) [2]	1,938	828	1,133	3,899
3. Number indicating reduction (question 5b) [2]	75	55	23	148
4. Number indicating significant reductions occurring in (question 6) [2 3]:				
a. First quarter	5	5	1	11
b. Second quarter	18	12	2	32
c. Third quarter	32	37	9	98
d. Fourth quarter	60	40	16	116
5. Number indicating reduction amounting to (question 8) [2]:				
a. Less than 2 percent of actual 1966 year-end inventories	2	4	1	8
b. 2 percent to 4.9 percent	23	11	5	39
c. 5 percent to 9.9 percent	21	16	4	41
d. 10 percent or more	25	21	6	52
e. Amount not specified	3	3	2	8
6. Number mentioning as cause of reduction (question 9) [2]:				
a. Rise in interest rates, total [4]	60	47	15	122
Business outlook effect	29	22	11	71
Cost of financing effect	46	26	9	81
b. Decline in the stock market, total [4]	15	14	3	32
Business outlook effect	11	14	3	28
Cost of financing effect	5	0	3	8
c. Difficulties in raising funds from financial institutions, total [4]	36	24	6	66
Unattractiveness of lending conditions (other than interest rates)	13	13	1	28
Unwillingness of institutions to supply desired funds	28	14	5	47
d. Difficulties in raising funds from capital markets, total [4]	5	3	0	8
Unattractiveness of terms (other than offering price or yield)	2	3	0	5
Unwillingness of underwriters to handle issues	3	0	0	3
e. Other financial market developments	12	9	3	24

1. Includes utilities, communications, finance, rail and other transportation, construction, mining, and services.
2. Question numbers refer to questionnaire (see Technical Notes).
3. Some firms indicated more than one quarter.
4. Includes firms which indicated both, or which did not distinguish between, (a) business outlook and cost of financing effects and/or (b) unattractiveness of lending conditions and unwillingness of institutions to supply desired funds.

Sources: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.

pared with those reducing 1966 investment, while the smallest size group experienced the smallest increase (table 8). The slower reaction of large firms is more difficult to rationalize for inventory than for fixed investment but may perhaps reflect the greater internal resources of the large firms to handle temporary needs for funds. Also, as in the case of plant and equipment expenditures, large firms tend to have more formal and rigid capital budgets than small firms and perhaps more advanced arrangements for financing.

Financial factors and inventories

With respect to the specific factors assigned responsibility for the 1966 reductions, the rise in interest rates, the decline in the stock market, and difficulties in raising funds from intermediaries were all mentioned a little more frequently by the smaller firms for inventories than for plant and equipment. This suggests that multiple factors were more frequently at work. With reference to 1967 inventory plans, the larger firms mentioned the effects of interest rates more frequently and the smaller firms less frequently than in the case of 1966 inventory investment, while difficulties in raising funds from intermediaries were also mentioned less frequently by the smaller firms. In both years, the number of firms mentioning the cost aspect of interest rate developments somewhat exceeded the number indicating the business outlook aspect, while the effect on the cost of funds of the stock market decline was of negligible importance.

Summary and Conclusions

While the major objective of our special survey is to provide as reliable an estimate as possible of the quantitative impact of last year's monetary stringency on business investment, the survey also makes available a wealth of other data on factors affecting business investment programs. It may be noted that the most interesting difference between the 1966 results on the relative importance of various factors affecting business investment programs and earlier results for 1949 and 1955 (obtained from similar though considerably less comprehensive surveys) was the increased influence of both financial market developments and of capital goods supply conditions in effecting reductions in planned plant and equipment expenditures.

Since monetary tools have been increasingly relied upon for economic stabilization purposes, it seems imperative that we gain more insight into the effectiveness of these tools and their impacts on different sectors of the economy. Until this survey, no reasonably satisfactory estimates of the effect of monetary policy on business investment have been available, even though business expenditures on plant and equipment and inventories constitute a high proportion of the total investment that credit policy is designed to affect.

On the basis of data collected in the survey, financial market developments in 1966 are estimated to have resulted in a reduction of approximately $500 million, or two-thirds of 1 percent of that year's $75 billion total of nonresidential, nonfarm fixed investment. The aggregate effect on nonfarm inventory investment in 1966 was of the same general order of magnitude, also amounting to an estimated $500 million, as compared with actual investment of $13.7 billion and a stock of nonfarm business inventories of $151 billion at the yearend. These estimates may include some indirect effects, reflecting the failure of sales to grow as rapidly as in the absence of credit restraint.

The restrictive impact of the 1966 credit squeeze on business investment increased significantly from the first to the fourth quarter of the year and was considerably larger on the 1967 investment programs than on 1966 expenditures. As a result of developments associated with the monetary stringency in 1966, business plans (made early in 1967) to invest in plant and equipment during 1967 were reduced by an amount estimated at somewhat under $1 billion, less than 1½ percent of anticipated fixed investment. Although the available data do not permit an estimate of the corresponding impact on business inventory investment in 1967, this is believed to be higher than the $500 million figure for 1966. The effects on business investment for 1966—and probably to a greater extent also for 1967—would be increased somewhat if full allowance is made for the indirect effects of the 1966 financial market developments, which would initially be expected to increase as the period of time is extended.

These estimated effects of monetary policy in 1966 on business investment in 1966 and 1967 seem quite small in almost any perspective, particularly when it is recalled that last year witnessed one of the periods of greatest credit stringency in many decades. There is interest not only in the small size of the "ultimate" impact but also in the significant lag between monetary action and any appreciable effect on business investment; this reflects both the time required to intensify monetary restrictions and the relatively slow impact on the large firms, which account for a high proportion of total investment. Apparently, not until the third quarter of 1966—more than 6 months after the decision to implement significant monetary restrictions—were even the small average 1966 effects on plant and equipment and inventory investment achieved. The somewhat larger 1967 effects, which were indicated even after the restrictive policy was reversed, were of course associated with significantly longer time lags. Lags tended to be shorter and the impact somewhat severe for the smaller firms.

The relatively small and significantly delayed overall impact of monetary policy on business investment is in interesting contrast to the shock effect of such policy on investment in housing. Although we do not have a reliable framework for estimating the effect of the credit stringency on housing, the rough magnitude of the effect seems reasonably clear. Housing investment

had been quite stable from 1964 through the first quarter of 1966. It started to decline in the second quarter of 1966, apparently largely in response to developments in the financial markets, and showed major weaknesses in the third and fourth quarters, declining $6.1 billion or 23 percent from a seasonally adjusted annual rate of $27.0 billion in the first quarter to $20.9 billion in the fourth. There were time lags here as well, but even by the third quarter, housing investment had declined $3.3 billion at an annual rate, or 12 percent, from the first quarter. As compared with either the 1965 or first quarter 1966 rate, the reduction in housing investment for the entire year 1966 amounted to $2.6 billion, or close to 10 percent.

Thus, it appears that monetary policy impinges to a much greater extent on the housing market than on business investment and that the former, unlike the latter, bears much of the brunt of economic stabilization through monetary policy. It should be pointed out, however, that as compared with business investment, housing presumably is also more greatly (and favorably) affected by monetary policy designed to stimulate investment during recessionary periods. Therefore, it is not clear whether over the entire business cycle the net effect of monetary policy is significantly greater for housing than for business investment. Moreover, even in 1966 nonmonetary policies may have been somewhat more restrictive on business investment than on housing. Late in the year, the suspension of the investment tax credit and of certain accelerated amortization procedures imposed some fiscal restraint on investment in plant and equipment expenditures (though the suspension was of relatively short duration).[10] Earlier in the year, the Administration had urged voluntary restraint. A consideration of the net affects of credit policy on housing and business investment over the cycle and a comparison with available alternatives from the viewpoint of economic stabilization and development are beyond the scope of this article.

TECHNICAL NOTES

The questionnaire reproduced below was mailed in late March 1967 to all firms that currently cooperate in the OBE–SEC quarterly surveys of plant and equipment expenditures, except for certain transportation companies (among these, only airlines and railroads and trucking companies classified as Class I by the Interstate Commerce Commission were surveyed). Questionnaires were sent to 8,876 cooperating companies; these companies account for approximately 70 percent of total nonagricultural assets of U.S. business enterprises. As in the regular quarterly surveys, the questionnaires were completed on a company basis, rather than on an individual establishment or plant basis.

Replies were received in April and May 1967 from 4,781 companies, 54 percent of the firms surveyed. Aggregate expenditures for plant and equipment in 1966 by the reporting firms were more than 60 percent of the $60.6 billion of such outlays made by all U.S. firms in the scope of the OBE–SEC survey of plant and equipment expenditures. Of the 4,781 returns, 145 questionnaires could not be meaningfully tabulated because of inadequate information. An additional 218 questionnaires were received too late for tabulation. (Inclusion of these returns would not have significantly affected the results presented here.) The analysis in this article consequently utilizes returns from 4,418 companies.

The response rate by industry in terms of numbers of firms surveyed was: manufacturing, 55 percent; trade, 53 percent; finance, 69 percent; utilities and communication, 52 percent; and all other groups, 48 percent. Individual company reports were examined and tabulated only by employees of the U.S. Department of Commerce, the Securities and Exchange Commission, and Interstate Commerce Commission.

Differences in scope between this survey and previous but more limited ones conducted in 1950 and 1956 may be of interest. The 1950 and 1956 surveys inquired into the reasons for deviations between actual and anticipated capital outlays in 1949 and 1955 respectively, essentially paralleling Section I of the current survey, but not Sections II and III. The two earlier surveys were mailed only to certain enterprises, chiefly manufacturing, whereas the present survey was mailed to all firms regularly cooperating in the OBE–SEC quarterly investment surveys (with the exceptions noted earlier). Moreover, the two earlier surveys included only those enterprises whose actual outlays in the year concerned exceeded certain levels (generally $5,000 for 1949 and $10,000 for 1955) and differed by more than 25 percent from their early anticipations (15 percent for firms with assets of $50 million and over in the survey for 1955).

[10] These measures, particularly the suspension of certain accelerated amortization procedures, may also have had a restrictive effect on apartment houses and consequently on residential construction.